

*** SVTC (video teleconference) with Hobbico set for 4/18/2013. [redacted]

[redacted]

** Q42, Q46, Q48 - Size sub C, 3000 mAh, NiMH rechargeable battery, from Tenergy [redacted]

TylerHowell

4/17/2013 0:00

*** Likely part of 7.2V, six cell battery pack for hobby-level RC vehicles.

* Received more images of two more PCBs (one with enclosure), PPT presentation created to explain electronics based on scene location (1 or 2): [redacted]

* Scene 2 [redacted]

** Q122 - 2.4 GHz receiver by Spektrum, model: SR200 or SR201, for hobby-level RC vehicles. [redacted]

*** SR200 is a discontinued model (as of 2013), SR201 is just a water-sealed variant [email from Horizon Hobby - unclass]. [redacted]

** Q41, Q52, Q138 - Duratrax Sprint ESC. [redacted]

*** Q138 provides manf./model, also confirmed by SVTC with hobbico. [redacted]

** Q42, Q46, Q48, Q115 - Size sub C, 3000 mAh, NiMH rechargeable battery, from Tenergy, 7.2V, likely "Tamiya" style connector. [redacted]

* STVC Call with Hobbico: [redacted]

** Confirmed that they are the seller of the Duratrax brand, including the Duratrax Spring ESC. [redacted]

** Indicated that Q39, the blue ESC, could be from Hobby King under the brand of Turingy. [redacted]

** Commented that transmitters from various manufacturers are typically not interoperable. [redacted]

** Informed that the Spektrum brand is produced by Horizon Hobby. [redacted]

TylerHowell

4/18/2013 0:00

** Was unaware of custom transmitter/receiver designs on the internet (checked on 4/22/2013 - there are).

* Eric Morefield tested the inter-operability of an exemplar Fly Sky transmitter and an exemplar Spektrum SR201 receiver. [redacted]

** Exemplars could not talk to each other. [redacted]

* Spektrum SR201 receiver instructions indicate the use of a Globally Unique Identifier. [redacted]

TylerHowell

4/19/2013 0:00

** Might be possible to attribute a transmitter and receiver.

		<ul style="list-style-type: none"> * Exemplar Spektrum DX2E transmitter purchased in Boston (BS) based on receipt attributed to living suspect.? * "Preliminary info (unverified yet) is that the surviving bomber indicated the initiator was a christmas tree bulb..."? ** Lab has a photograph of a lightbulb, but unknown if this was the initiator.? * Spektrum SR201 receiver exemplar delivered to EEP? ** Spektrum SR201 receiver main IC identified, can likely read the "GUID" (really just a PN spreading code for
TylerHowell	4/22/2013 0:00	<ul style="list-style-type: none"> DSSS) using SPI. * Ordered exemplars:? ** 4 - Spektrum DX2E transmitters? ** 4 - Spektrum SR201 receivers? ** 4 - FlySky FS-GT3B transmitters? ** 4 - FlySky FS-GR3E receivers? ** 2 - Duratrax Spring ESC? ** 2 - Helion Dominus ESC? * SR201 main IC is a micro and radio in a single package.? ** I2C bus for micro is broken out on the board (verified thru pinout/probing).? ** Radio portion talks to micro over SPI, might be able to obtain access to SPI over I2C.? ** Attached header to board, attempted to read using Arudino micro, did not work.? ** Brandon Warhurst attempted to read, did not work.?
TylerHowell	4/23/2013 0:00	<ul style="list-style-type: none"> ** Will need to debug reading process. * Received first round of exemplar Spektrum transmitter/receiver, Duratrax ESC? ** Receiver is the same board revision as evidence.? * Gary Baird stated RF testing of transmtiter/receiver.? * Tested interoperability of Spektrum Tx and FS Rx?
TylerHowell	4/24/2013 0:00	<ul style="list-style-type: none"> ** Devices are not interoperable. * Generated powerpoint presentation to aid in discovery of transmitter.?
TylerHowell	4/25/2013 0:00	<ul style="list-style-type: none"> * Photographed evidence and exemplars.

* Gary Baird measured RF spectrum on FlySky and Spektrum transmitters.
 ** RF characteristics are different enough to prevent communication between systems.
 * Mo Boudaoud suggested testing Spektrum Tx/Rx of case device instead of attempting to recover PN code off of micro.
 ** Transmitter (if/when recovered) would be in good enough shape to transmit.
 ** Receiver needs electronics placed on donor board.
 ** PN code could potentially time consuming to acquire

TylerHowell 4/26/2013 0:00 ** Testing the link would give best results.
 * Informed that the transmitter for this device might not be found.

TylerHowell 4/30/2013 0:00 ** Will not pursue obtaining the bind code from the receiver.
 * Sent email requesting leads for Cypress and Horizon Hobby help in reading GUID and if GUID can be attributed to point of sale.
 * Brandon Warhurst attempted to communicate with an exemplar SR201 over 5-pin header.
 ** 90 Hz pulse train on both data and clock line.
 ** Could possibly be a PWM signal, but unknown at this time.

TylerHowell 5/1/2013 0:00 ** Placing receiver into bind mode removes pulse train on pins.
 * Removed RF can from Spektrum DX2E transmitter's RF module.
 ** CYRF6936 - a 2.4 GHz DSSS radio tranceiver from Cypress Semiconductor.
 *** MISO/MOSI/SCK are *not* broken out to 12-pin header, instead connect to PSoC.

TylerHowell 5/2/2013 0:00 ** CY8C21434 - a Programmable System-on-Chip (PSoC) from Cypress Semiconductor.
 X-rayed SR201 reciever:

TylerHowell 5/9/2013 0:00 * X-ray did not show any crack on die.
 Reading GUID from Spektrum SR201:

TylerHowell 5/14/2013 0:00 * Successfully performed read of GUID from example SR201 using Cyrpress's minipro3.

TylerHowell 6/18/2013 0:00 * Started work on word document for device.
 * Captured SPI traffic on example Tx

TylerHowell 6/21/2013 0:00 ** Used SS as a trigger, then CLK as another trigger to obtian 4M states

Attempted to read GUID from evidence RX:␣

* Cannot connect to device:␣

"FAILED! Can not Acquire Device! Please verify the device connection to the Programmer␣

Please, check the following items:␣

- the connection between the programmer and the PSoC;␣

- the correct programming protocol is selected;␣

- the correct connector option is selected."␣

* Impedence between power/ground is nominal.␣

* When powered, no current is drawn by device.␣

** Likely non-operational device.␣

Decoded SPI on TX module:␣

* MISO always contains 0x48 (0b0b01001000) - indicates improper communication.␣

** Unable to see any read results.␣

TylerHowell 6/24/2013 0:00 * Able to see writing of registers/values.

TylerHowell 6/25/2013 0:00 Decoded SPI communication using SPI parser and Logic Analyzer